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# PERSONNEL SECURITY PRESCREENING:
## An Application of the Armed Services Applicant Profile (ASAP)



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The Armed Services Applicant Profile (ASAP), a background/biodata questionnaire, was investigated to determine if it could be used to predict the results of background investigations conducted for recruits applying for high security risk jobs. Using data from an ongoing ASAP validation study, an ASAP predictor key score was developed using a weighted application blank method. Results indicated that the ASAP scoring key correlated significantly with the background investigation criterion measure ($r$ = .36). In addition, the validity of the key held up well across different subgroups. It was concluded that behavioral science tests such as ASAP could potentially play an important role in the personnel security screening process.

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# PERSONNEL SECURITY PRESCREENING: AN APPLICATION OF THE ARMED SERVICES APPLICANT PROFILE (ASAP)

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## Summary

### Problem and Background

The military services have high security risk billets for enlisted accessions that must be filled only by extremely trustworthy and reliable personnel. To ensure that newly assigned personnel are qualified from a security perspective, each service uses various prescreening procedures. In addition, for candidates successfully passing the initial prescreen, an intensive and costly background investigation is conducted by the Defense Investigative Service and adjudicated by the respective service.

There has been increasing DoD concern with espionage incidents and other failures of security clearance policies to protect classified information. There is a need to examine and validate new procedures and approaches, including behavioral science tests, that could provide valid and cost-effective supplemental or alternative methods for screening personnel.

### Objective

The objective of the present study was to examine the validity of an experimental DoD prescreening instrument in the personnel security arena. More specifically, the Armed Services Applicant Profile (ASAP), a background/biodata questionnaire, was investigated to determine if it could be used to predict the results of background investigations conducted for recruits applying for high security risk jobs.

### Approach

Data from an ongoing ASAP validation study were used. The predictor variables were ASAP item responses, along with AFQT and years of education. The subjects consisted of 3,257 enlisted personnel, from an original accession sample of 55,675, who were potentially entering high security risk jobs. These individuals had completed the ASAP as a part of an ongoing DoD study. In addition, they had successfully passed prescreening by their respective services and had a completed background investigation.

Classification of a background investigation as an issue case or non-issue case represented the criterion variable. Issue cases are significant because they often indicate that there may be adverse information in the person's background that reflects on that person's trustworthiness or reliability and thus on his or her qualifications to hold a high security

risk job. Also, issue case status has been shown to predict subsequent unsuitability discharge from the military service. Approximately 12 percent of the background investigations were identified as issue cases.

The ASAP predictor score was developed using a weighted application blank method. Approximately one-half of the total background investigation sample was randomly assigned to the scoring-key development group while the remainder was used as a holdout group for cross-validation purposes.

## Results

The ASAP scoring key correlated significantly with the issue case criterion measure ($r = .36$). In addition, the validity of the ASAP key held up well across different subgroups (i.e., individual services, white/minority, male/female). Results indicated that almost 24 percent of the those individuals having the lowest 20 percent of the ASAP scores had issue case background investigations. On the other hand, among the highest 20 percent of ASAP scorers, only 4.4 percent were issue cases. Overall, the ASAP was a far superior predictor than either AFQT or years of education.

Analyses of the different content categories of biodata items on the ASAP indicated that issue case personnel were more likely to have used tobacco, had problems in school and on previous jobs, and committed a number of minor misbehaviors before entering the service. Finally, with regard to adjudication results for Army and Air Force personnel, ASAP differentiated between those personnel who were granted a top secret or higher clearance versus those personnel who received a secret clearance or were denied a clearance.

## Conclusions

The results supported the potential use of ASAP type instruments as prescreens for personnel entering high security risk jobs. A number of caveats were identified which suggest that additional studies may have to be conducted using more refined security criteria. In addition, the operational implications of using prescreening instruments need to be more clearly delineated. Nonetheless, it appears that behavioral science tests such as the ASAP could potentially play an important role in the personnel security screening process.

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# Introduction

## Problem

The military services have high security risk billets for enlisted accessions that require a top secret (TS) or sensitive compartmented information (SCI) clearance. These jobs are usually found in the communications, intelligence, cryptology, and electronic ratings. In addition, critical positions exist for new enlisted accessions in the Nuclear Weapon Personnel Reliability Programs run by each of the services. In order to be assigned to the above jobs, an intensive and costly background investigation must first be conducted by the Defense Investigative Service. The findings from this investigation serve as the basis for granting or denying the required personnel security clearance. To reduce investigative costs as well as to select potentially trustworthy and reliable personnel, each service initiates prescreening procedures prior to the initiation of a request for a formal background investigation. These procedures select out personnel potentially unqualified from a security perspective; the result is that background investigations are only requested for personnel successfully passing the prescreen.

There is considerable variability across the services in the prescreening procedures used for applicants and recruits applying for high security risk jobs (Flyer, 1986). At the present time, it is not known which service's approach is working best; the procedures have not been systematically validated with regard to their usefulness and cost-effectiveness. There is a need to conduct such validation studies as well as to examine new procedures and approaches that could provide valid and cost-effective supplemental or alternative prescreening methods.

## Objective

The objective of the present study was to examine the validity of an experimental DoD prescreening questionnaire in the personnel security arena. More specifically, the Armed Services Applicant Profile(ASAP) was investigated to determine if it could be used to predict the results of background investigations conducted for recruits applying for high security risk jobs. If questionnaires such as the ASAP are found to be valid predictors of personnel security criteria, they could be used as cost-effective prescreening devices to supplement existing prescreening approaches for high security risk jobs. They could also reduce the probability of assigning unreliable personnel to high security risk jobs.

## Background

There has been increasing Department of Defense (DoD) concern with espionage incidents and other failures of security clearance policies to protect classified information as well as with the efficiency of the security clearance process. In response, a select panel (Department of Defense, 1982) was formed to review the DoD Personnel Security Program. More recently, a DoD security review commission (Keeping the Nation's Secrets, 1985) was established to review all aspects of DoD security practices and procedures. While a number of new initiatives and recommendations were generated, one area that received positive endorsements by both groups was increased research in the application of behavioral science tests as a part of the prescreening and investigatory procedures used to approve security clearances.

The military services are not systematically using behavioral science tests to prescreen recruits for high security risk jobs. Each service has its own prescreening procedures, and all make use of some variant of a prescreening interview in combination with information from various questionnaires that address previous drug use, involvement with the law, financial problems, and other information relevant to suitability for assignment to sensitive jobs. Only the Air Force uses psychological tests (i.e., biographic, attitude, and personality items) as a part of its prescreening process (see Flyer, 1986, for a more thorough discussion of service prescreening procedures for high security risk jobs).

There is a need to assess whether behavioral science tests can validly predict personnel security criteria. If one test proved particularly useful, it could provide an effective procedure for initially prescreening personnel applying for high risk security jobs. Individuals successfully passing the first prescreen could then be screened in greater depth by the current programs being used by each of the services. Actual operational use of such a test would have to depend on a number of criteria, including cost benefits and the size of the applicant pool. However, there is first a need to assess whether such tests are even predictive of important personnel security criteria.

Examination of the psychological test data being gathered by the Air Force would provide one approach for initially determining the validity of psychological tests in personnel security. However, the focus of the current effort was to look at an instrument that had been administered to personnel in all of the services. This would allow for a validity assessment across the different services. The Armed Services Applicant Profile met this requirement, and it is discussed in greater detail below.

The Armed Services Applicant Profile (ASAP). The General Accounting Office issued a 1982 report that noted that all of the services were conducting research on similar biographical (biodata) questionnaires for screening applicants to reduce first term attrition (General Accounting Office, 1982). In response to this report and to Congressional interest in enlisted screening procedures that place less emphasis on high school graduate status, DoD initiated a study to develop and validate a biodata questionnaire suitable for use by all services as an adaptability screening instrument (Atwater, Walker & Weaver, 1987). The resultant biodata questionnaire was the Armed Services Applicant Profile (ASAP). An ASAP validation study against a criterion of first year attrition is currently being conducted by the Navy Personnel Research and Development Center in San Diego, California (Trent, in preparation).

The ASAP could provide an ideal initial vehicle for examining the predictive validity of one type of behavioral science test, the biographical questionnaire, against personnel security criteria. Although the test was not specifically designed as a personnel security prescreening instrument, the ASAP includes a wide range of biographical items. Personal history items have been demonstrated to predict a variety of complex behaviors in the private sector (Ghiselli, 1966; Asher, 1972; Owens, 1976; Cascio, 1982). Also, the fact that the ASAP was designed to predict adaptability to military life makes it potentially relevant to personnel security. Personnel reliability and suitability are two criteria important to personnel security prescreening. Clearly, failure to complete the first year of military service due to adaptability problems indicates potential unreliability and unsuitability for security responsibilities in sensitive jobs. Specific personnel security criteria encompass a number of areas and these are discussed in greater detail below.

Personnel security criteria. The basic goal of personnel security policy is to ensure that no person is given access to classified information or assigned to sensitive duties unless a favorable determination has first been made regarding his or her loyalty, trustworthiness, reliability, and judgment. For military enlisted accessions entering high security risk jobs, there is an initial cognitive screening to qualify personnel for training schools. In addition, service prescreening programs and the background investigation are used to achieve the above personnel security objective.

During both the prescreening and background investigation phase, an attempt is made to identify adverse background information relevant to personnel security. This usually includes information on financial irresponsibility, criminal conduct, sexual misconduct, mental or emotional illness,

hostile foreign country connections, subversive activity, alcohol and drug abuse, and previous security violations (Department of Defense, 1979). The final granting of a security clearance affirms that an individual has no significant adverse background information that would make him or her ineligible for access to classified information.

Clearly, the key personnel security criterion is whether or not an individual demonstrates reliability, trustworthiness, good judgment, and loyalty in the actual handling and use of classified information. Failure to do so could be manifested at one level in excessive security violations and at the extreme in the deliberate compromise of classified information, including espionage. From a test validation perspective, neither of these criteria are useful. Espionage has such a low base rate that no existing behavioral science test could demonstrate significant prediction. With regard to security violations, the base rate is somewhat higher but still very low for reliable prediction; also, historical security violation data are not systematically maintained on centralized data bases and therefore cannot be accessed for large scale validation studies.

For military enlisted personnel, a potential surrogate measure could be early discharge from high security risk jobs for unsuitability reasons. Flyer (1986, pp. 12-13) has elaborated on this criterion:

> Since a major objective of the Defense personnel security program is to identify people who are suitable for assignment to highly sensitive positions, later unsuitability discharge among those selected for these positions could be viewed in part as failure of the screening process. Also, and critically important, personnel discharged from highly sensitive positions for unsuitability pose a special security problem. A number of those discharged are likely to be quite bitter as a result of their experience during military service, many would be knowledgeable of sensitive equipment and procedures, and almost all would be facing some degree of financial uncertainty on their return to civilian life.

For the current study, the problem with using unsuitability discharges as the criterion is that reliable measurement necessitates that individuals be tracked for one to four years after their entry into active service. While such a longitudinal study could be undertaken in the future, there was a need to identify a more proximal criterion. The background investigation provided such a measure.

Background investigation issue cases. An Entrance National Agency Check (ENTNAC) is required for all non-prior service enlisted accessions. In addition, personnel entering high security risk jobs must have the in-depth background investigation (BI) completed. Whereas the ENTNAC consists of a search of records held by various federal agencies, the BI includes checks of local police records, a credit check, educational and employment checks, interview of references, and in some cases, a subject interview. The Manual for Personnel Security Investigations (Defense Investigative Service, 1985) outlines the basic requirements for conducting the different types of BIs. In those cases where potential derogatory information is uncovered during the normal investigative procedures, an expanded investigation is often conducted in the problem area. This situation is called an issue case. It should be noted that the investigatory process does not pass judgment on the individual; rather, it merely uncovers as much relevant information as possible, given certain resource constraints. Actual review of the information for granting clearances occurs during a later adjudicative phase.

Issue cases are important because they signify that there may be adverse information in the person's background that reflects on that person's trustworthiness or reliability and thus on his or her qualifications to hold a high level security clearance. Identification of an issue case is not a perfect measure of whether or not an investigation yielded significant adverse information:

1. When an issue case investigation is expanded, it sometimes turns out (perhaps 10 percent of the time) that the case is favorably resolved. That is, the original assessment that there was adverse information did not hold up when the specific incidents were investigated in depth. Nonetheless, the case still remains an issue case, since it did require an expanded investigation.

2. An initial investigation may yield adverse information. Many investigations may not become issue cases even though they contain valid derogatory information.

3. It is possible that there may be resistance to the use of the issue case label. The focus of the investigative process is to provide relevant information on different aspects of a person's background but not to make a judgment as to the severity of that information for security clearance decisions. The use of the issue case label may connote such a judgment and thus may not be used in some instances.

4. Finally, even when an issue case contains valid adverse information, it may still be positively adjudicated during a later review process. The adjudicator may determine

that the information is not significant enough to deny a security clearance.

The above limitations might argue for focusing only on those small proportion of issue cases that are negatively adjudicated. In these instances, there would be no doubt that the case contained adverse information. However, despite the above problems, issue case status still appears to be an important criterion independent of the adjudication results. Flyer (1985) conducted analyses that pointed out the importance of issue case status for military enlisted accessions. He analyzed data for over 1.5 million non-prior service male enlisted personnel entering the military services during the period FY-74 to FY-78. About 150,000 or ten percent of this population had background investigations completed during their initial tour of duty. For this subsample, he determined unsuitability discharge rates for issue cases and non-issue cases as a function of high school graduation status. These results are reproduced in Table 1.

Enlistees whose background investigations resulted in issue cases were much more likely to be separated or discharged early for unsuitability reasons. This relationship held up across all services and for both high school and non-high school graduates. Flyer's results strongly indicate that issue case status is an important predictor of future unsuitability discharges. They also argue for using issue case status of background investigations as one of the criteria for the initial validation of potential prescreening tests.

TABLE 1

Unsuitability Discharge Rates by Background Investigation Results[a]

| Group | Percent Attrition Rate | | |
|---|---|---|---|
| | Army | Navy | Air Force |
| High School Graduates | | | |
| Issue Cases | 36.2 | 31.8 | 61.1 |
| Non-Issue Cases | 17.7 | 22.6 | 26.5 |
| Non-High School Graduates | | | |
| Issue Cases | 54.9 | 58.8 | 61.1 |
| Non-Issue Cases | 34.7 | 43.7 | 47.2 |

[a]Data represent all male non-prior service enlisted personnel entering the military services during the period FY-74 to FY-78 who had background investigations. Data taken from Flyer, 1985. (N = 150,000)

## Approach

The approach used in this study was to use existing data from an ongoing ASAP validation study to examine the usefulness of biodata items as predictors of a personnel security screening criterion. The prediction variables were ASAP item responses, along with AFQT and education, while the criterion variable represented the results of a background investigation conducted for each enlisted accession classified to enter a sensitive billet.

### Instrument/Predictors

Biodata instrument - ASAP. The ASAP has two parallel forms with each form consisting of 130 biodata items developed from previous research (Atwater et al., 1987). Each form contains 60 common items in Part 1 that duplicate the Military Applicant Profile (MAP), a biodata instrument used to screen non-high school graduate applicants to the U. S. Army (Frank & Erwin, 1978). Part 2 of each form contains an additional 30 common items plus 40 unique items. The majority of Part 2 items are from the Recruit Background Questionnaire developed at the Navy Personnel Research and Development Center (Atwater & Abrahams, 1983). The 130 items fall into a number of rational content clusters, and this distribution for ASAP Form 1 items is shown in Table 2.

TABLE 2

Content Clusters for Items
on the Armed Services Applicant Profile (Form 1)

| Content Area | Number of Items | Content Area | Number of Items |
|---|---|---|---|
| Self Description | 24 | Childhood/Family Experiences | 8 |
| School Background | 18 | Self-Esteem | 8 |
| Work History | 16 | Athletic Activity | 5 |
| Minor Misbehaviors | 11 | General Perceptions | 4 |
| Social Activities | 9 | Alcohol/Tobacco Use | 3 |
| Enlistment Influences | 9 | Hobbies/Interests | 3 |
| Service Perceptions | 9 | Family's Socio-Economic Status | 3 |

As can be seen in Table 2, ASAP items cover a wide range of background areas, with the greatest concentration in the general self-description, school background, and work history clusters. All potential ASAP items were reviewed extensively

to eliminate items likely to be perceived as offensive by applicants or biased against subgroups. In addition, highly intrusive items were also excluded from the final questionnaire. Response options to items vary as a function of the type of question but always include from three to five fixed response choices; over 70 percent of the items offer five response choices. Some item response options represent different qualitative choices while others approximate Likert-type scales. It should be noted that the three socio-economic status items, two of the school background items, and two of the self-description items are currently being excluded from scoring in the DoD ASAP study.

Because the ASAP is currently undergoing experimental validation and because of its potential operational use by DoD in the future, specific ASAP items are not presented in this report. However, the following item is representative of the kind of self-report questions that constitute the ASAP:

What were your grades in high school?

A. Mostly A's
B. Mostly A's and B's
C. Mostly B's and C's
D. Mostly C's and D's
E. Mostly D's and below

Items range from those that could be potentially verified (such as the foregoing sample item) to more subjective and non-verifiable items such as "How much do you smoke?", or "How do you feel when people tell you what to do?".

Other predictors. In order to determine whether the ASAP was a better predictor of issue cases than more traditional screening variables, two additional measures were included in the study. These included the Armed Forces Qualification Test (AFQT) score, a general aptitude measure used to screen all military applicants, and a three tier measure of education level (high school graduate, alternative certificate holder, and non-high school graduate (see Eitelberg, Laurence, Waters, & Perelman, 1984). The above data were obtained for all accessions who completed the ASAP by matching those records with service master tapes maintained by the Defense Manpower Data Center (DMDC) in Monterey, California.

## ASAP Administration

All military applicants in the continental United States for the 3-month period from December 1984 to February 1985 completed the ASAP at either a Mobile Enlistment Testing Site or a Military Enlistment Processing Station as a part of the DoD validation study. A total of 205,968 completed the ASAP,

which required approximately 60 minutes to administer. A comparison of demographic data for this 3-month sample with all FY 1985 applicants yielded no substantial differences with regard to race and gender, while some over-sampling of high school graduates and low AFQT scorers was evident (Atwater et al., in press).

It is important to note that military applicants rather than new enlistees were tested in order to gain realistic self-responding data that included distortion to "look good" (Walker, 1985). Thus, empirically derived scoring keys based on the applicant data could control for such distortion.

## Subjects

ASAP sample. The ongoing DoD ASAP study is tracking the first year attrition of all non-prior service, active duty accessions. For the current study, a cutoff date of 30 June 1986 yielded a non-prior service accession sample of 55,675 enlisted personnel. This initial sample excluded 3,490 prior service accessions and 73,327 non-accession applicants from a total active duty applicant sample of 132,492.

As mentioned earlier, there are a number of jobs for incoming enlisted accessions that require a TS or SCI clearance. In addition, critical positions for incoming enlisted personnel also exist as part of the Nuclear Weapon Personnel Reliability Program. For the purpose of the present report, the above billets have been labeled as high security risk jobs. They represent job categories for which the individual services conduct special prescreening and that require background investigations be completed (and positively adjudicated) for personnel prior to initial assignment.

Background investigation sample. The current focus was on enlisted personnel applying for these high security risk jobs that required a DIS background investigation. Since this study was initiated after the recruits had successfully passed the prescreening procedures used by each service, there was no way to retroactively identify those recruits who were prescreened out. Selective data on all background investigations (including issue case status) is maintained on the Defense Central Index of Investigations (DCII). This data base is warehoused at DMDC. In order to identify ASAP accessions with background investigations, DMDC merged existing ASAP files from the ongoing DoD study with the DCII files. This merging yielded 3,275 enlisted personnel who had both ASAP data and a completed background investigation. Thus, the subjects selected for this study were the prescreened subsample ($N$ = 3,257) of the 55,765 ASAP non-prior service accessions for whom a background investigation was both requested by the individual services and completed by the Defense Investigative Service. A breakout of this sample by the different services is presented in Table 3.

TABLE 3

Background Investigation Sample by Service

| Service | Total Accessions N | Accessions with Background Investigations N | % |
|---|---|---|---|
| Army | 25,136 | 882 | 3.5 |
| Navy | 11,963 | 1,011 | 8.5 |
| Air Force | 12,350 | 1,259 | 10.2 |
| Marines | 6,226 | 1.05 | 1.7 |
| Total | 55,675 | 3,257 | 5.9 |

Approximately six percent of the accessions had a formal background investigation. The Air Force had the largest proportion (10.2%) of accessions with investigations while the Marines had the lowest percentage (1.7%). A comparison was made between the demographic characteristics of the total accession sample and the subsample for whom a background investigation was completed. These data are shown in Table 4.

TABLE 4

Comparison of Total Accession Sample with Background Investigation Subsample on Selected Demographic Variables

| Subgroup (N = 55,675) | Percent of Total: All Accessions (N = 3,257) | Percent of Total: Accessions with Background Investigations |
|---|---|---|
| High School Status | | |
| No Certificate | 5.4 | 1.8 |
| Alternative Credential | 6.2 | 2.0 |
| High School Diploma | 88.4 | 96.2 |
| Gender | | |
| Female | 14.0 | 22.0 |
| Male | 86.0 | 78.0 |
| Race | | |
| Black | 20.1 | 16.7 |
| White | 75.0 | 79.5 |
| Other | 4.9 | 3.8 |
| AFQT | | |
| I (93-99) | 3.5 | 8.8 |
| II (65-92) | 31.6 | 45.5 |
| IIIa (50-64) | 24.2 | 20.8 |
| IIIb (31-49) | 32.6 | 22.4 |
| IV (21-30) | 8.1 | 2.4 |

The background investigation subsample differed from the total accession sample with fewer minorities (20.5% vs 25.0%), more females (22.0% vs 14.0%), more high school graduates (96.2% vs 88.4%), and higher AFQT scores. The higher education and AFQT composition of the background investigation subsample reflected initial prescreening for training schools (i.e., jobs that require a background investigation also require a post-boot camp training school with aptitude cut-off scores).

Criterion: Background Investigation Issue Cases

Classification of a background investigation as an issue case or non-issue case represented the criterion variable. Table 5 presents a breakout of the percentage of issues cases for the background investigation subsample (N = 3,257) by service and by selected demographic variables.

TABLE 5

Percentage of Issue Cases
by Service and Selected Demographic Variables

| Subgroup | Number of Investigations | Percentage of Issue Cases |
|---|---|---|
| Service | | |
| Army | 882 | 12.0 |
| Navy | 1,011 | 17.8 |
| Air Force | 1,259 | 8.0 |
| Marines | 105 | 7.6 |
| Gender | | |
| Female | 715 | 9.8 |
| Male | 2,542 | 12.8 |
| Race | | |
| Black | 545 | 14.3 |
| White | 2,587 | 11.7 |
| Other | 125 | 12.0 |
| High School Status | | |
| No Certificate | 60 | 31.6 |
| Alternative Credential | 65 | 21.5 |
| High School Diploma | 3,132 | 11.6 |
| AFQT | | |
| I (93-99) | 287 | 11.5 |
| II (65-92) | 1,482 | 10.1 |
| IIIb (50-64) | 679 | 13.4 |
| IIIa (31-49) | 731 | 14.5 |
| IV (21-30) | 78 | 17.9 |
| Total | 3,257 | 12.1 |

Approximately 12 percent of the background investigations were identified as issue cases, with this rate varying from a high of 17.8 percent for the Navy to a low of 7.6 percent for the Marines. In general, the issue case rates were very similar across the different demographic variables. However, there were large differences between the percentage of issue cases for non-high school graduates (31.6%), alternative certificate holders (21.5%), and high school graduates (11.6%). It should be noted that over 96 percent of the total sample had a high school diploma.

Adjudication. As mentioned earlier, the findings from the background investigations are adjudicated separately by each of the services prior to granting a security clearance. The results of this adjudication process in terms of either granting or denying a clearance are coded on the DCII files for Army and Air Force personnel. Clearance data for Navy personnel has just recently been added to the DCII files but does not include historical data relevant to the Navy ASAP sample.

Although the primary focus of the current study was on the issue case/non-issue case criterion, it was of interest to determine whether the ASAP would also predict adjudication results. Thus, for Army and Air Force personnel only, DCII files were matched with the ASAP files to obtain data relevant to final adjudication/clearance decisions.

## Scoring Key Development

Given the small sample size in the low criterion group (i.e., those personnel with issue case background investigations), and in order to double the N, the 90 common items on both Form 1 and Form 2 were treated as a single shortened questionnaire. Consistent with the ongoing DoD study, six of these common items were discarded because of possible bias against subgroups. The result was that the 3,257 accessions who had background investigations were now treated as one sample who had completed a shortened version of the ASAP. All futures references to the ASAP in this report refer to this common core of 84 items.

Approximately 52 percent ($N$ = 1,679) of the background investigation accessions were randomly assigned to a scoring-key development sample; the remainder ($N$ = 1,578) were assigned to a holdout sample for statistical cross-validation purposes. The ASAP predictor score was developed using the "weighted application blank" method (England, 1971). The Navy Personnel Research and Development Center's KEYCON program (Abrahams, Neumann, & Rimland, 1973) was used to select items for the scoring key. This was accomplished within the key development sample by comparing for each item choice the

percentage of high criterion respondents (relative to the total high criterion group) with the percentage of low criterion respondents (relative to the total low criterion group). This percent difference was then used as the weighted score for that response.

Three different keys were developed, based on response differences that equaled or exceeded one, five, or ten percent. Using the five percent difference key as an example, if 60.3 percent of the high criterion group in the key construction sample endorsed a particular response option while only 52.1 percent of the low criterion group endorsed it, that option received a weight of +8.2. Similarly, if 30.3 percent of the high criterion group endorsed another response option while 42.8 percent of the low criterion group endorsed it, that option received a weight of -12.5. For this key, percent differences less than five percent were scored as zero. An individual's total ASAP score consisted of the sum of the response weights for those item responses endorsed.

## Results and Discussion

### ASAP Validities

Table 6 presents correlations (between ASAP scores and the issue case criterion) from the key development and cross-validation samples for the three different scoring keys based on one percent (Key A), five percent (Key B), and ten percent (Key C) item response differences. These correlations were not corrected for indirect restriction of range of the ASAP scores resulting from the service security prescreening procedures; accurate estimates of the amount of restriction were not available. All point biserial correlations were corrected to biserial correlations because of the extreme split (90/10) on the dichotomous criterion.

TABLE 6

ASAP Validities for Different Scoring Keys

| Scoring Key % D | Items Scored | Item Responses | Key Development Sample ($N$ = 1679) $r_{Pbis}$ | $r_{bis}$ | Cross-Validation Sample ($N$ = 1578) $r_{Pbis}$ | $r_{bis}$ |
|---|---|---|---|---|---|---|
| A (1%) | 83 | 250 | .27 | .44 | .22 | .36 |
| B (5%) | 41 | 62 | .24 | .39 | .22 | .36 |
| C (10%) | 8 | 10 | .18 | .29 | .21 | .34 |

Note: All point biserial and biserial correlations are significant ($p<.001$).

The cross validation biserial correlations were all significant ($p < .001$) and were identical for Key A and Key B ($r = .36$) and slightly lower for Key C ($r = .34$). Since Key B, based on the five percent differences, yielded an identical cross validity as the one percent key, yet required only 41 scored items (as opposed to 83 items for Key A), it was used to further examine the relationship between the ASAP and issue case rates. Figure 1 graphically illustrates this relationship by quintiles for the total cross-validation sample.

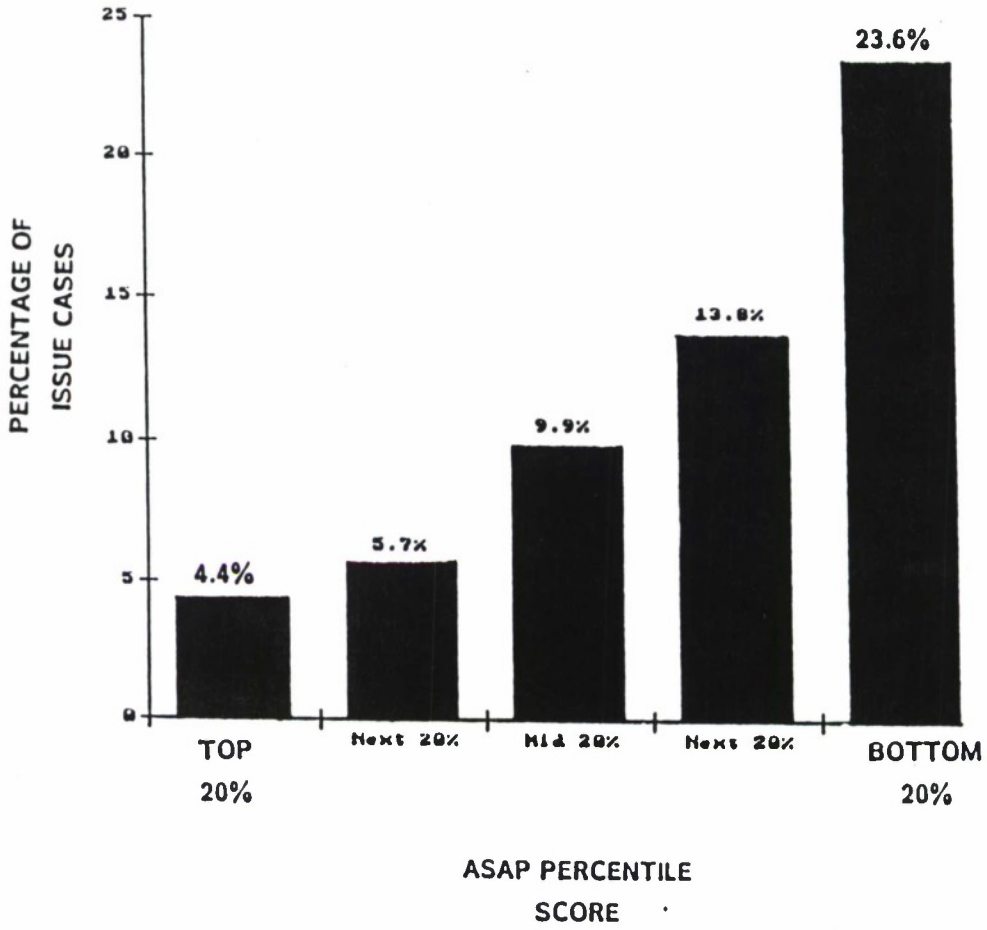


Figure 1. Issue case rate by ASAP score quintiles for cross validation group (N=1,578).

Figure 1 shows that almost 24 percent of those individuals having the lowest 20 percent of the ASAP scores had issue case background investigations. On the other hand, among the highest 20 percent of ASAP scorers, only 4.4 percent had issue case background investigations. Overall, the higher the ASAP quintile, the lower the rate of issue cases. Interestingly, approximately 42 percent of the issue case personnel scored in the lowest 20 percent quintile on the ASAP. In other words, if we eliminated the lowest 20 percent of the ASAP scorers, about 42 percent of the issue cases would be eliminated.

ASAP validities were also examined for subgroups of the cross-validation sample. These data are presented in Table 7 using the five percent difference scoring key.

Within the different services, the ASAP validities were significant ($p < .001$) for the Army, Navy, and Air Force samples and were significantly higher ($p < .01$) for Army ($r = .40$) and Navy ($r = .38$) personnel than for Air Force personnel ($r = .22$). Because of the small sample size, no significant results were obtained for the Marine sample. Significant and similar validities ($r = .35$ or $.36$, $p < .001$)were obtained for females, males, whites, and non-whites. Overall, the validity of the ASAP key held up well across different subgroups.

TABLE 7

ASAP Validities by Subgroups

| Cross-Validation Group | Issue Case N | Non-Issue Case N | Issue Case % | ASAP Score Mean Issue Case | ASAP Score Mean Non-Issue Case | ASAP Score Standard Dev. Issue Case | ASAP Score Standard Dev. Non-Issue Case | Biserial Correlation r | Biserial Correlation Sig. p< |
|---|---|---|---|---|---|---|---|---|---|
| **Service** | | | | | | | | | |
| Army | 45 | 379 | 10.6 | 31.3 | 77.3 | 51.9 | 56.9 | .40 | .001 |
| Navy | 90 | 411 | 18.0 | 31.1 | 65.6 | 57.0 | 54.6 | .38 | .001 |
| Air Force | 41 | 552 | 6.9 | 52.8 | 80.3 | 50.0 | 51.7 | .22 | .001 |
| Marines | 6 | 54 | 10.0 | 58.2 | 84.6 | 101.0 | 53.4 | .22 | NS |
| **Gender** | | | | | | | | | |
| Females | 33 | 310 | 9.6 | 44.6 | 87.9 | 56.7 | 52.2 | .36 | .001 |
| Males | 149 | 1,086 | 12.1 | 35.2 | 72.5 | 56.4 | 56.8 | .35 | .001 |
| **Race** | | | | | | | | | |
| Whites | 141 | 1,117 | 11.2 | 34.4 | 74.8 | 57.9 | 56.1 | .36 | .001 |
| Non-Whites | 41 | 279 | 12.8 | 45.6 | 77.3 | 50.7 | 47.3 | .35 | .001 |
| Overall | 182 | 1,396 | 11.5 | 37.0 | 75.3 | 54.5 | 56.4 | .36 | .001 |

## Content Categories

Table 8 rank orders different content categories of biodata items by the degree to which they discriminated between issue case and non-issue case personnel. The mean item discrimination was computed for 13 rational content areas representing the 84 ASAP items. This measure, for a given content cluster, consisted of summing the absolute values of the percentage differences in item choice responding between the issue case and non-issue case personnel and then dividing by the number of items in that cluster.

TABLE 8

Rank Order of Content Categories
by Mean Item Discrimination

| Content Rank | Content Cluster | Number of Items | Mean Item Discrimination[a] |
|---|---|---|---|
| 1 | Tobacco Use | 2 | 60.95 |
| 2 | Minor Misbehaviors | 8 | 30.24 |
| 3 | Work History | 9 | 22.00 |
| 4 | School Background | 12 | 19.18 |
| 5 | Service Perceptions | 7 | 16.57 |
| 6 | Social Activities | 9 | 15.46 |
| 7 | Enlistment Influences | 6 | 13.27 |
| 8 | Athletic Activity | 5 | 12.90 |
| 9 | Hobbies/Interests | 3 | 12.23 |
| 10 | Self-Descriptions | 13 | 12.01 |
| 11 | Childhood/Family Experiences | 6 | 11.95 |
| 12 | General Perceptions | 1 | 11.90 |
| 13 | Self-Esteem | 3 | 7.23 |
| -- | Total Scored Items | 84 | 18.91 |

[a] This measure represents the absolute value of the percentage differences between the issue case and non-issue case groups summed across response choices in a content cluster and then divided by the number of items in that cluster.

By far, the content cluster that showed the greatest discrimination addressed tobacco use (the alcohol use item that was originally part of this cluster was not one of the 84 ASAP items common across the two forms). The second best discriminator was minor misbehaviors, followed by work history and school background. The other nine categories ranged from a high of 16.57 for items on service perceptions to a low of 7.23 for self-esteem items.

In order to provide more concrete examples of the types of items that discriminated between the issue case and non-issue case personnel, the same analytical technique was used to rank

order the 15 items showing the greatest between-group discrimination. These results are shown in Table 9.

TABLE 9

ASAP Items Showing Greatest Between-Group Discrimination

| Rank | Issue Case Personnel More Likely to: | Content Cluster | Total Item Discrimination[a] |
|---|---|---|---|
| 1 | Smoke | 12 | 61.60 |
| 2 | Start smoking at younger age | 12 | 60.30 |
| 3 | Be suspended from school at younger age | 4 | 43.80 |
| 4 | Have a tattoo | 4 | 43.60 |
| 5 | Be fired from a civilian job | 3 | 43.60 |
| 6 | Be expelled from school | 4 | 42.60 |
| 7 | Have thought about quitting school | 2 | 30.80 |
| 8 | Have parents who were unhappy about their school grades | 2 | 30.40 |
| 9 | Have lower grades in school | 2 | 29.40 |
| 10 | Stay out more on weekends | 5 | 27.40 |
| 11 | Have been in trouble with police | 4 | 26.00 |
| 12 | Have had more full time jobs | 3 | 25.30 |
| 13 | Not plan on making service a career | 7 | 25.30 |
| 14 | Have school grades lower than they expected | 2 | 24.00 |
| 15 | Have applied for more jobs | 3 | 23.30 |

[a] This measure represents the absolute value of the percentage difference between the issue case and non-issue case groups summed across the response choices for an item.

Those personnel whose background investigations resulted in issue cases were more likely to smoke and to have started smoking at a younger age. They were more likely (when compared to non-issue case personnel) to have (1) made lower grades than either they or their parents expected, (2) made lower grades than non-issue case personnel, (3) experienced problems in school, including having been expelled and/or suspended and having thought about quitting school, (4) held and/or applied for more full time jobs, (5) been fired from a civilian job, (6) gotten a tattoo, (7) stayed out more on weekends, and (8) decided not to make the service a career. This profile suggests that the typical individual with an issue case background investigation had turned away from an unhappy school situation to seek an outside job and socio-economic rewards. The fact that the individual had problems both in school (e.g., more likely to have been expelled or suspended) and on the job

(e.g., more likely to have been fired) suggests a general factor of unreliability. Overall, this profile does not represent the ideal type of person that the military services would want to assign to a high security risk job. Surprisingly, all of these individuals had successfully passed the service prescreening procedures since they all had a background investigation.

Other Predictors

In order to assess whether the ASAP was a more valid predictor of issue cases than other commonly used measures, AFQT scores and years of education were examined. Table 10 presents the results of the analyses assessing the relationship for personnel in the cross-validation sample between these predictors and the issue case criterion.

TABLE 10

Relationship Between Predictors and Issue Case Criterion
(Cross-Validation Sample N = 1,578)

| Variable | Mean | | Standard Deviation | | $r_{Pbis}$ | $r_{bis}$ |
|---|---|---|---|---|---|---|
| | Issue Case | Non-Issue Case | Issue Case | Non-Issue Case | | |
| ASAP | 37.0 | 75.3 | 54.5 | 56.4 | .22** | .36** |
| AFQT | 62.1 | 66.4 | 19.4 | 19.4 | .07* | .11** |
| Years Education | 7.2 | 7.4 | 1.0 | 1.2 | .06* | .10** |

Note: Issue case criterion is 1 = issue case and 2 = non-issue case. Years of education ranges from 1 = 1-7 years to 13 = doctorate or equivalent.

* $p<.01$
** $p<.001$

AFQT scores and years of education were significantly correlated with the issue case criterion (biserial r's of .11 and .10, respectively); however, these relationships were not as strong as that for the ASAP (biserial r = .36). Non-issue case personnel scored considerably higher on the ASAP (mean = 75.3) than their issue case counterparts (mean = 37.0).

Regression analyses were undertaken to examine whether the combination of the three predictors would improve prediction. In the first regression analysis, AFQT was forced into the stepwise regression equation first, followed by years of education and ASAP. In the second regression analysis, the variables entered in their natural order (ASAP, AFQT, then

years of education). The results of these analyses are shown in Table 11.

TABLE 11

ASAP Incremental Validity
(Cross-Validation Sample N = 1,578)

| Step | Variable | Simple r | Multiple R | Significance of Change p< |
|---|---|---|---|---|
| (1) | AFQT | .11 | .114 | .001 |
| (2) | Years Education | .10 | .132 | NS |
| (3) | ASAP | .36 | .362 | .001 |
| (1) | ASAP | .36 | .356 | .001 |
| (2) | AFQT | .11 | .360 | NS |
| (3) | Years Education | .10 | .362 | NS |

Note: All correlations have been converted from point-biserial to biserial.

While the ASAP significantly added to the prediction when AFQT and years of education were entered first, neither AFQT nor years of education significantly added to the prediction when ASAP entered first. Indeed, the prediction using ASAP alone (biserial r = .358) was almost identical to the prediction obtained when using all three variables in combination (biserial r = .367). Overall, the ASAP was a far superior predictor to either of the other two measures.

## Adjudication Results

Table 12 presents the results from the adjudication phase for Army and Air Force personnel, broken down by the issue case status of the background investigation.

TABLE 12

Adjudication Decision by Issue Case Status

| Clearance | Background Investigation: Issue Case N | Issue Case % | Non-Issue Case N | Non-Issue Case % | Total N | Total % |
|---|---|---|---|---|---|---|
| Denied | 7 | (33) | 14 | (67) | 21 | (1) |
| Pending Adjudication | 31 | (29) | 77 | (71) | 108 | (5) |
| Secret | 17 | (12) | 124 | (88) | 141 | (7) |
| Top Secret/SCI | 147 | (8) | 1684 | (92) | 1831 | (87) |

Note: Table includes only Army and Air Force personnel.

Only one percent of the sample had their clearance denied based on information from the background investigation. Five percent of the sample had the adjudication decision still pending. This category often represents personnel for whom the adjudicator has requested additional information either because the overall investigative results are incomplete or, more likely, because adverse information needs to be documented in greater detail to potentially support a clearance denial. The seven percent of the sample in the secret category could either represent individuals whose new job turned out not to require a top secret/SCI clearance, or, in some cases, individuals whose background investigation yielded results that would disqualify them from the highest level clearances but would still support a secret clearance. Eighty-seven percent of the sample received a top secret/SCI clearance.

An examination of Table 12 with regard to issue case status of the background investigation provides some interesting findings. Two-thirds of those personnel who had their clearance denied did not have issue case background investigations. Likewise, over 70 percent of the personnel in the pending adjudication category were not issue cases. These results substantiate earlier assertions that a large number (perhaps as high as 2/3) of the personnel with adverse background information are not classified as issue cases.

A comparison of the ASAP scores for personnel in each of the four adjudication categories is presented in Table 13.

TABLE 13

Comparison of ASAP Scores
by Different Adjudication Categories

| Clearance | ASAP Scores[a] | |
|---|---|---|
| | N | Mean |
| Denied | 21 | 38.8 |
| Pending Adjudication | 108 | 47.9 |
| Secret | 141 | 57.3 |
| Top Secret/SCI | 1,831 | 78.8 |

[a] $F = 20.2$, $p < .001$, $(df = 3, 2097)$

## Conclusions

The objective of the present study was to conduct an exploratory study examining the validity of behavioral science tests in predicting personnel security criteria. More specifically. an assessment was made to determine the degree to which the ASAP could predict the issue case status of background investigations. The results were very encouraging. ASAP scores significantly predicted the issue case criterion and also differentiated between those Army and Air Force personnel who were granted a top secret/SCI clearance versus those personnel who received a lower clearance or were denied a clearance. While the results support the potential use of ASAP-type instruments as prescreens for personnel entering high security risk jobs, a number of caveats emerge.

First, the present study could not identify those personnel who were prescreened out by the service prior to the formal request for a background investigation. This selected-out group is especially important because the greatest feasibility in using instruments such as the ASAP may be identifying those personnel who have a high probability of being prescreened out by the services. Administration of an instrument such as the ASAP may be far more cost effective than conducting more in-depth prescreening on a total applicant pool. Future research must determine whether or not instruments such as the ASAP can cost-effectively perform this function.

A second limitation of the current study concerned the use of issue cases as the key criterion. The fact that two-thirds of the personnel who were denied clearances were not issue cases indicates that there is a need to better measure the degree to which background investigations contain adverse information. It is certainly too costly and time consuming for researchers to review and classify hard copy background data for the large samples usually found in test validation studies. One alternative may be to have adjudicators provide ratings of the degree of severity of the adverse background information in those cases where they do not deny a clearance. These ratings could be done both for the overall investigation and by different content areas (e.g., involvement with law, substance abuse, financial problems, etc.). Such ratings could then be used for research purposes only. Clearly, the degree to which policy makers will accept the implementation of prescreening tests will heavily depend on the reliability and validity of both these tests and the personnel security criteria used to validate them.

Lastly, and perhaps most importantly, the present study was conducted as an exploratory effort. The recruiting, classification, and other operational implications of implementing instruments such as the ASAP were not examined in depth. There is clearly a need for a thorough and detailed mapping of the prescreening procedures and policies used by each of the different services.

Flyer (1986) has provided initial data for this mapping. However, such a study should expand on Flyer's work to include detailed information for each of the services on different organizational responsibilities, different information collected, and different decision processes. Such information, properly organized, could provide a framework for identifying those points in the prescreening process where tests such as the ASAP could provide the most leverage. It could also identify interaction points across the services that might provide opportunities for cost savings through improved consolidation.

Despite the above caveats, the findings from the current study are encouraging. It appears that behavior science tests such as the ASAP can potentially play an important role in the prescreening of applicants for high security risk jobs. Implementation issues are critical but are not insurmountable. Future studies in this area could provide the operational detail necessary to firmly implement the recommendations of the two recent security panels/commissions -- that behavioral science tests, if valid, be incorporated into the prescreening procedures used to approve security clearances.

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